AMERICAN NURSERYMAN

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

NOVEMBER 15, 1935

Abies Concolor

Hardy Garden Chrysanthemums
Mulches for Winter Protection
Practices in Seed Propagation

AMERICAN NURSERYMAN

Chief Exponent of the Nursery Trade

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PLANNED BUYING.

While the headline may remind one of government planning which did not turn out so happily as projected, nevertheless it is true that business finds its larger profits through forethought and plan. This is particularly true with reference to nursery stock purchased for resale. Hand-to-mouth buying has been practiced from necessity during the past few years, but the time has come to change that policy. R. D. Underwood, in the Jewell News Flash, says in this regard:

"Everyone knows, of course, that an immense amount of nursery stock has been moved in recent years in boxed shipments l.c.l. freight rate, with consequent increase of transportation expense and reduction in profit. All wholesale growers have each season filled many orders for their customers which, if assembled, would have made at least one, and often more than one, bulk car shipment; and analysis has shown that the combined cost of boxing and higher l.c.l. freight rate was several times what the total cost would have been in bulk.

"Much nursery stock is bulky, and many items—particularly B. & B. evergreens—stack up the weight fast. We have packed many bulk cars where only half, and sometimes less than half, of the cubic capacity of the car was used, but with an aggregate weight which came up to, or exceeded, the minimum weight of 16,000 pounds. Consequently, it is of great importance that mode of shipment be always carefully considered to effect the greatest saving.

"The time has come when the retail trade can, with confidence, look ahead and anticipate requirements for spring trade. It should be done conservatively, of course. Where there is late fall and winter solicitation, it will pay to check progressive sales with stock on hand and place orders for needed things as they appear.

"There now seems to be no question in anyone's mind that spring of 1936 spot sales will be at least as great as those of 1935. So conservative buying in advance for next spring's spot sales should now be seriously considered wherever advantageous prices may be found."

SELL CUT GREENS.

How many nurserymen who grow blocks of evergreens realize the quantity of cut material which florists use for grave decorations, funeral work and other arrangements? During the months of snow, particularly, the florists welcome a change from the cut ferns and Asparagus plumosus which they use the year around. Hence, boughs of spruce, cedar, hemlock and balsam are in demand, particularly around the Christmas season.

If you have evergreens which should be thinned out, or perhaps deformed trees that you would send to the brush pile, these can be stripped of their boughs and the latter sold to florists for a price that will be welcome. What would otherwise be waste and a loss can be turned into usefulness and profit.

Moderate quantities of such materials may be disposed of direct to florists in your own locality or in neighboring towns. Larger supplies will require efforts to make contact with the large buyers, more likely wholesale florists and supply houses than the retailers direct. The meat packers are not the only ones who can turn waste into a dollars-getting by-product. Nurserymen can do likewise at this season.

Florists also have use for small evergreens, sometimes with roots, sometimes only the tops, to fill window boxes, urns and the like over winter. The variety of services which florists perform for the public makes them a valuable ally and outlet for nurserymen. Those in your locality may help move your stock in various ways.

The leading article in the December issue of Better Homes and Gardens, entitled "All from an Evergreen Tree," tells the ways in which the author, Fae Huttenlocher, used cut evergreens and small trees from the nursery for Christmas decorations and winter planting of window boxes. Most nurserymen know the many uses these can be put to, but few have attempted to develop a winter business in them. There is yet time to take advantage of the opportunity provided by the Christmas holidays.

ABIES CONCOLOR.

There is still time in many parts of the country for nurserymen to plant specimen Christmas trees about homes, and Abies concolor, with its beautiful bluish green color and symmetrical pyramidal shape, is an excellent conifer for this purpose. A typical specimen is shown on the front cover. Often the color of the so-called white fir, or Colorado fir, is fully as attractive as that of the flaunted blue spruce, and the growth of the former is usually more regular and, of course, the foliage is softer than that of the spruce.

Abies concolor is found from southern Oregon to southern California, in northern Mexico, New Mexico, Colorado and eastward. The Colorado form is best for the northern and eastern states, where it does especially well. It has the greatest adaptability of all the firs, withstanding heat and drought well, so that it is particularly useful in the northern section of the middle west.

A characteristic that will appeal to many home owners is this fir's rapid development, established specimens often making an average annual growth of eighteen inches. This can be slowed down, however, and a more compact development induced by pinching out the leader bud early in the spring. The tip bud on side branches that are growing too fast can be removed similarly to assist in forming well shaped specimens. This is about the only pruning that will be found necessary in growing fine Colorado firs.

(Concluded on page 10.)

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Hardy Garden Chrysanthemums

In This Article Eugene H. Michel, of H. A. Dreer, Inc., Discusses Varieties; in the Next Issue He Will Treat Their Culture

Hardy garden chrysanthemums are, to a large extent, definitely different from chrysanthemums of the same type intended for either purely cut flower or pot plant use. Their value must be gauged by their usefulness to the amateur, who wants, first, a decorative subject for garden decoration and, second, one that will help to ornament his home with cut flowers. They bloom in the fall when most annuals and perennials have passed out of the picture. It takes heavy freezing to injure them seriously.

Twenty-five years ago our collection of these hardy chrysanthemums was at its best about November 1 in the middle Atlantic states, and heavy freezing often injured them before they were in full bloom. Now, with normal treatment, through the selection of earlier varieties introduced in the intervening period, we find that the average blooming date has advanced nearer to October 1. Many varieties try to bloom in August, but except in the northern states, their value is doubtful unless the plants are properly pruned to delay their flowering.

Prune Too Early Sorts.

The chrysanthemum is a cold-blooded plant and will not develop good flowers in the hot sun of our summers. For that reason, from the standpoint of the amateur gardener, there is no justification for trying to produce chrysanthemums in August while annuals and perennials are still making good displays.

The extremely early varieties with the tendency to bloom in August can be made quite useful for later by pruning them back in early August. Experience will teach when to do this to bring on the crop of bloom when you want it. There has been much discussion lately regarding the variety Amelia, also known as Pink Cushion and Azaleamum. Gardeners have found that plants put out in June or July bloomed beautifully, while those planted in April tried to flower in the summer and apparently exhausted themselves, making practically no showing in the fall. These gardeners came to the erroneous conclusion that such varieties should not be planted early.

The contrary is true. By planting early a much better plant is produced, which, if pruned once in June and again in early August, will make a wonderful display in September and early October when, with the weather cooler, chrysanthemums can properly develop and other garden flowers are no longer available.

Much interest has centered about the efforts of hybridizers in recent years. Elmer D. Smith, Adrian, Mich., the veteran chrysanthemum specialist, has introduced hundreds of new chrysanthemums during the past score of years, among them many outstanding, double, hardy varieties. Many of his are standard today. He was quoted recently as having stated, "You know, you can get about any kind of chrysanthemum you want by crossing the right parents, growing your seedlings, selecting and then repeating the process until you succeed." Very simple it sounds. But when you stop to consider that every repetition of the process involves another year and thousands of seedlings, it is no wonder that we are still working along simple lines with our ideals in mind and still far away. The ideals of ten years ago may have been surpassed, but with each new development other hopes and aims spring up to intrigue us on to further effort.

Alex Cumming, Jr., of Bristol Nurseries, Inc., Bristol, Conn., had what might be called a dream, an intuition or perhaps even a conviction, to the effect that if some of the hardier species were crossed with what is commonly called Chrysanthemum hortorum, we would secure a relatively hardier strain with all the varied forms and colors of the prevailing type. History has proved the correctness of his theory. The Korean crosses introduced by him several years ago not ony possess distinct merit in themselves, but, having in their hortorum ancestry the conglomerate strains of thousands of varying types, forms and colors, supply prolific parents for new breaks. Interesting crosses made by Mr. Cumming with such subjects as Chrysanthemum arcticum and pyrethrums give us the hope that some more novel developments are in the offing.

Popular Garden Varieties.

The public is becoming highly conscious of these hardy garden chrysanthemums, which enjoy the fall stage in the gardens much to themselves. No other plants are there to distract.

In accord with what seems a primary consideration, I shall submit a list of popular and useful garden varieties. I have found it true that among the later-flowering sorts there

are many with qualities superior to those possessed by the early varieties. In our offerings, we have classified the varieties as small and button-flowered, early aster-flowered, mid-season aster-flowered, singles and Korean hybrids. Varieties deemed suitable for cut flowers are marked*. Varieties for pots are marked x.

SMALL AND BUTTON-FLOWERED.

*Adironda—an old popular bronze.
*Capt. R. H. Cook—tall rose-pink.
x*Cheerfulness—compact free yellow.
Ethel—dark bronze button.
xIrene—white.
x*Jewel—fine upright old rose.
*Model of Perfection—tall upright white.
*Mrs. H. Harrison—upright pale pink.
xOuray—bright orange bronze.
*R. Marion Hatton—upright yellow.
xRodell—compact bright yellow.
Ruth—rather late wine color.

EARLY ASTER-FLOWERED.

Aladdin—very early bronze.
xAmelia—very early pink, compact plant.
Barbara Cumming—very early yellow.
Carrie—early pale yellow.
xGlomero—compact yellow changing to bronze.
xLa Somme—delicate pink.
Marie duPont—dwarf large white.
Provence—pale pink.
*Tasiva—very free pure white.
Yellow Normandie—yellow.

MIDSEASON DOUBLE ASTER-FLOWERED.

*Chestnut Burr—excellent bronze.
Comoleta—large incurved yellow.
xGanna—deep lilac pink.
Granny Scoville—large deep orange buff.
*Lillian Doty—well known pink.
*Mrs. H. E. Kidder—fine large yellow.
*Muldoon—excellent purple.
Murillo—large deep pink.
*Oconto—large upright white.
*Rapture—excellent orange red shading to carmine.
Ruth Cumming—large deep orange bronze.
*White Doty—excellent pure white.
*Yellow Doty—deep yellow.

SINGLE AND SEMIDOUBLE.

Autumn Leaf—semidouble red and orange.
*Cavalier—deep red tall single.
Firebrand—bright scarlet single.
*Grenadier—crimson red with orange suffusion.
xHalo—dwarf pink.
Indian Maid—excellent deep orange.
xPersia—semidouble rosy carmine.
*Princess—large single white.
Redskin—orange scarlet changing to coppery rose.
*Sensation—bright scarlet single with large golden halo.
xSunbright—clear golden yellow single.
*The Chief—semidouble bright scarlet with golden reverse.
The Torch—semidouble orange scarlet with gold.
xUnique—semidouble deep carmine rose.
Warrior—semidouble crimson maroon with golden reverse.

Korean Hybrids Approved.

The six Korean hybrids first sent out are here listed. Their long wiry stems and dainty unique coloring distinguish them from the types of hardy chrysanthemums previously known. Several of them have proved desirable for cut flower purposes, especially for domestic, or home, use. I do not know of anyone who has grown them extensively for this purpose commercially. As potted plants, they do not appear adaptable. As garden subjects, they have met with wide approval.

Apollo—bronzy red.
Ceres—chamois pink.
Daphne—daphne pink.
Diana—rose pink.
Mars—deep amaranth red.
Mercury—coppery flesh.

To the foregoing have been added Vulcan, a deep red, and Hebe, a pretty pink. But, beginning with seedlings of 1934 which will be first offered in 1936, a tremendous advance has been made in Korean hybrids. Many of the varieties created are the result of self-pollination and demonstrate the conglomerate mixing of all sorts of strains in the hortorum parentage.

The most gratifying results apparent are the increased size of the flowers, a greater variety of form, a much larger range of colors and, above all, an advanced flowering date. While chrysanthemums were all late in this area this year, the original Korean crosses blooming from October 10 onward, we found dozens of the 1934 hybrids in fine display about September 19, an advance of three weeks in the flowering date.

From these, ten varieties with particularly early-flowering dates have been selected for popular introduction in 1936. These have been named for stars as a sort of distinguishing mark. Scores of others are being retained for further observation, but the ten mentioned later are the earliest and embrace a full line of color. All are single or semidouble.

Ten Selected for Introduction.

Some of those retained for further trial are fully double. It is only a matter of another year or two before the Korean strain will embrace a full range of perfectly double varieties. We believe most of them may prove valuable for commercial cut flower purposes and several have already been selected by practical growers as fit for pot culture. The ten varieties selected for introduction next year are:

Niobe—a vigorous healthy plant of dwarf compact habit. Flowers over two and one-half inches in diameter of a clear glistening white with a yellow disc are freely produced, fully covering the plant.

Sappho—a compact dwarf plant covered with good-size, pure yellow, single flowers.

Juno—an extremely dwarf compact plant, producing an abundance of single flowers opening a coppery red and fading with age to a salmon flesh.

Vesta—a plant of medium height and great vigor literally covered with flowers over two and one-half inches in diameter of a deep golden orange shade; almost a duplex.

Nysa—a large, rather tall, upright plant growing two and one-half to three feet in height and producing a great abundance of single flowers three inches in diameter. The color is a clear rosy lilac.

Fortuna—a very vigorous plant of medium height covered with unique, curly-petaled, ox blood red flowers three to four inches in diameter; very striking.

Thalia—a compact bushy plant growing eighteen to twenty-four inches in height. The duplex flowers are of a lively orange shade and of excellent form.

Psyche—wonderfully dainty 4 to 5-inch single blooms are produced with wiry stems on strong healthy plants of medium height. The color is a clean, lively shell pink.

Clio—dwarf compact plant of pleasing habit producing masses of deep carmine rose duplex flowers.

Hestia—the nicely formed semi-double flowers are freely produced on compact bushy plants of medium height. The color is a delicate rose-pink, with a white halo around the small yellow disc.

Chrysanthemum Morifolium.

No list of garden chrysanthemums should omit the resurrected species, morifolium, which is one of the accredited parents of the hortorum type. A congenial companion to the early-flowering Korean hybrids is this beautiful species from the orient. It is a vigorous, free-branching plant of exceptionally symmetrical habit producing hundreds of 1 to 1½-inch single pink flowers, beginning about the middle of September. It is wonderfully useful either in the border or rockery.

Mulches for Winter Protection

Materials for Winter Coverings, Their Purposes and Application—
By Dr. C. H. Connors, of New Jersey College of Agriculture

The dictionary defines a mulch as any substance—straw, sawdust, leaves and the like—spread upon the ground to protect the roots of plants from heat, cold or drought. Sometimes the mulch fulfills two of these requirements—protection from heat and drought, or from cold and drought.

The need for mulching is not always clear in the minds of gardeners. At one time it was considered almost criminal not to mulch the perennial border in winter, when, as a matter of fact, plants have gone safely through winter without this protection. The danger of damage, of course, varies with climate and with the condition of the soil. If the soil is not in good physical condition, the danger of injury during winter is always greater. For good growth of plants, it is advisable to have a rather high content of decayed organic matter in the soil. This absorbs and holds moisture against the time of drought and at the same time lessens the danger of injury from heaving, since the organic matter slows up the reaction of the soil to heat or cold.

Probably the greatest loss of plants in gardens during the winter is the result of heaving, although in very sandy soils there is some loss from what is called dry freezing. If the soil in which plants are growing freezes and thaws frequently, the roots which anchor the plants may be broken off and the crowns of the plants will be raised above the soil level. This is especially likely to happen with those plants which have rather heavy roots that are tap-like in nature, such as gypsophila, aquilegia, delphinium and so on. The breaking off of the feeding roots means that moisture cannot be absorbed, and the raising of the crown in the air exposes a portion of the root to free air, which is an unusual condition frequently resulting in the killing of the tissue.

To prevent this damage, the mulch should be applied after the soil has been frozen to a depth of about two inches. The object of the mulch, in this case, is not to keep the soil from freezing, but to keep it frozen as long as possible. Of course, warm spells will come, but if the soil is covered with a mulch, it will not thaw so quickly as it would if it were bare. Neither will it freeze so rapidly as it would if it were bare. The mulch, then, results in a retardation of the freezing and the thawing, and consequently is an insurance against heaving.

Mention has been made of the dry freezing that is apt to occur in very sandy soils. Unless these soils have been improved with decayed organic matter to act as a sponge, the soil water quickly drains from the surface three or four inches. Because of the large spaces among the grains, the large body of air in these spaces becomes very cold, and in contact with the roots kills the tissue. A mulch in this case helps to retain moisture in the top layer of soil and hence tends to reduce danger from freezing.

For Evergreens.

A good example of the use of a mulch to keep heat out is observed in the case of ericaceous plants, such as rhododendrons and azaleas. These plants naturally grow in partly shaded situations, in soils with a high organic content. It has been observed that they will make sturdier, more stocky growth, that more flowers will be produced and that there is more freedom from certain diseases if they are grown in full sun. However, certain conditions must be fulfilled. There must be plenty of organic matter in the soil, which in this case must be acid in reaction, and there must be a heavy mulch to keep the roots cool and at the same time retain moisture.

The mulch over the roots of rhododendrons and similar evergreen plants serves another important purpose, that of keeping out the cold. This holds true whether they are growing in full sun or in shade. These plants are all relatively shallow-rooted; that is, the feeding roots are close to the surface. These broad-leaved evergreens are constantly transpiring moisture, even during winter when growth has ceased, and the transpiration is especially rapid when the wind is blowing. If the soil about the roots freezes too deep, there will be no moisture for the roots to absorb, and that which is transpired will be taken from the plant tissue. Thus the vitality of the plants is lowered and death often results.

For rhododendrons and their like, there is no better mulch than oak leaves. The mulch should be four to six inches deep and should be added to each year. It can be held in place by using twigs among the leaves. These leaves, as they decay, supply nutrients that the plants require and at the same time create the acid condition that is necessary. If only maple, poplar or similar soft, thin leaves are available, it would be wiser to use a mulch of two or three inches of coarse peat moss. Maple and other soft leaves rot quickly and leave an alkaline residue, which in time will be injurious to the plants.

During the past two years there has been severe injury to boxwood from freezing. While it is true that the extremely low temperatures have killed tissue, and also that weakening of the plants by attacks of disease has made them more susceptible to injury, nevertheless a number of cases have been observed where there was practically no killing because proper protection had been given.

In one case in particular, the tops of the plants had been protected, but, in addition, certain of the plants had the added protection of a mulch which prevented deep freezing. These latter plants came through with little leaf scorch, while those with only the tops covered showed some injury. The freezing of the soil water placed it in such a condition that the roots could not absorb it, resulting in partial desiccation of the leaf and stem tissue through the transpiration, and consequent danger from extreme cold.

The last two groups mentioned have been broad-leaved evergreens. It is seldom necessary to protect coniferous evergreens, such as arborvitæs, retinisporas, yews and junipers after they have become established. However, it is usually advisable to mulch them for a year or two after planting, especially if they have been

planted in the autumn. While they are usually moved with a ball of soil about the roots, it takes a little while for this ball to become consolidated with the soil about it. It will take a longer time if the burlap is left about the ball. A mulch will help to retain moisture and will prevent deep freezing, thus permitting and encouraging root action throughout a good part of the winter.

Materials for Mulches.

Of the types of materials to use for mulches, much can be said. Certain types of planting may require different treatment. A recommendation has already been made concerning the mulch for rhododendrons and their kin, namely, oak leaves or peat moss.

Snow is an excellent mulching material, for it is a good insulator because of the numerous air spaces. A good coating of snow, therefore, gives protection against severe freezing. This was evidenced during the winter of 1933-34, when partially hardy plants, such as California privet and hybrid tea roses, were killed back to the snow line. In one garden, an alpine garden in the true sense, no mulch is applied until two or three inches of snow have fallen. As soon as this occurs, a mulch of salt hay is applied. The salt hay tends to prevent the melting of the snow, and a natural mulch on that type of garden is therefore present.

As a general statement, a mulch should be loose and open, because what is known as an exchange of gases is necessary. Even though plants are dormant during the winter, there are chemical changes that are brought about in the plant tissue and in the soil that result in waste gases being given off. It should be possible for these gases to escape and to be replaced by fresh air containing oxygen. Consequently, if the mulching material is of such a nature that it will pack tight, or if it becomes watersoaked readily and will pack down and freeze, the exchange of gases will be prevented. Further, the mulching material should be free of disease and insects and of objectionable seeds.

An older recommendation was to allow the dead stems of perennials to remain on the garden in winter, to catch and hold the leaves and snow. It is now believed much wiser to remove dead plant stems from the garden and to destroy them by burning, as they may harbor diseases and insects over winter.

In certain works on gardening it is recommended that the garden be mulched in winter with spruce, fir or hemlock boughs. These do form ideal mulching materials where they can be obtained readily, but so few of us have forests of these evergreens where we can cut mulching material that their use is generally out of the question. Next to these, a hard straw, such as rye straw or wheat straw, is to be recommended. It is wise to try to obtain straw that has been well threshed, however, for the seeds may cause a problem, although not a serious one, in the garden the following year. Strawy manure is sometimes used, but unless it is very strawy, the solid part may freeze to the ground. Besides, there may be weed seeds present in the remnants of hay.

Well rotted manure is not usually considered desirable. It is apt to freeze solid and hence create a smothering blanket. Salt hay is often used, but the stems are so fine that they are apt to pack down. If the mulch of salt hay is loosened up occasionally with a fork, it will prove satisfactory. Leaves by themselves are seldom to be recommended, unless oak leaves are used. These do not become watersoaked. If the leaves of maples, poplars and lindens are the only mulching material available, it is advisable first to place a layer of twigs upon the soil, and then to put the leaves on top of the twigs. This will permit a free circulation of air under the leaves even if they should pack down and freeze.

When to Apply.

The time of applying the mulch will vary with the subject. For evergreen plants, such as rhododendrons, boxwood and coniferous evergreens, recently planted, make sure that the soil surrounding the plants is well supplied with moisture. Before deep freezing occurs, the mulch should be applied, because with these plants it is deep freezing of the soil that we desire to prevent, as far as possible.

In the perennial border, it is advisable to wait until the soil is frozen to a depth of about two inches, and then to apply the mulch. The object of using the mulch, in this case, is to keep the soil frozen as long as possible and to retard thawing and, again, freezing. It is rapid alternate freezing and thawing that is responsible for the heaving of plants.

The mulch in the perennial border should be applied to a depth of from three to six inches. In applying it, care must be exercised not to cover the tops of those plants that retain their green leaves all winter, such as iberis, or hardy candytuft, oriental poppies and armeria. Covering the tops may result in the smothering and consequent death of the plants. The leaves should be lifted and the mulch carefully placed under them and around the corms of the plants.

There is one other type of mulch that is used, and that is a soil mulch about the more tender types of roses, especially hybrid teas. In this case, additional soil is piled up about the crown of the plant to a height of about six inches. The tops of the rose plants may kill back, but this killing back will usually be only to the top of the soil. Thus ample wood is left for the production of a new top the following year.

PENNSYLVANIA NURSERIES

The licensing of nurseries has again set a new high record in Pennsylvania, according to the state department of agriculture. The final report for the inspection year, which closed September 30, shows 845 nurseries, containing 12,768 acres of stock licensed. This represents an increase of forty-nine in number of nurseries and 3,697 in acreage compared with the previous year.

When the first nursery inspection law was passed, in 1901, there were 121 nurseries, containing 2,200 acres licensed in the state, according to the records on file in the department.

Inspectors report that nurserymen have been able to maintain complete lines of stock and that prices have not been materially increased over last year. It is, therefore, felt that a real opportunity exists for property owners to buy good, well grown stock at reasonable prices.

An unusually large demand for fruit trees, especially peaches, due to the great loss of orchards in New York and northern Pennsylvania as a result of recent severe winters, is anticipated during the coming year.

Practices in Seed Propagation

Third of a Series of Articles by L. C. Chadwick on Methods Developed by Scientific Research Aiding Nurserymen in Production

Any discussion of the germination of seeds of woody plants must first of all take into consideration the natural variation in the nature of seeds and their readiness to germinate at maturity. To the average nurseryman such considerations and the practices involved in the treatment of seeds so that they will germinate when given proper atmospheric conditions of optimum moisture, temperature and oxygen are more important than the actual sowing of the seeds and the management of the seedlings. Perhaps the term maturity should not be used to denote the nature of the seed at the time it is collected, but it may be so used for want of one better. A mature condition as used here may refer to seeds at the time they can be removed from the parent plant and be handled as individuals.

Most seeds may be classified into five groups as to their readiness to germinate at maturity. These may be expressed as (1) those that germinate immediately upon harvesting, (2) those that possess an immature or incompletely organized embryo, (3) those that have a hard seed coat which prevents the protrusion of the embryo root and shoot, prevents the necessary penetration and absorption of water and oxygen necessary for growth or causes the accumulation of carbon dioxide within the seed which in sufficient quantities may be toxic, (4) those which require a distinct rest period and (5) those which possess a combination of these conditions, especially hard seed coats and a distinct rest period.

A brief discussion of the practices involved in bringing seeds in each of these groups to the point where they will germinate when given proper atmospheric conditions will be presented. First of all, it will be well to clarify certain terms frequently seen in the literature when discussion of this subject is given. These terms are dormant or dormancy, rest and afterripening. We often find these used as analogous terms. In this discussion they will be used as follows: A seed may be said to be dormant when it shows inability to grow due to any cause. Rest denotes inability to grow due to some internal cause, and afterripening denotes the physical and chemical changes that take place within the seed during the rest period. It will be noticed, as they are used here, that dormancy is a more inclusive term than rest. Dormancy may be due to either internal or external causes, while, as mentioned, rest refers to the internal causes only. There is no term in the literature to denote only the external causes of cessation of growth.

Germinate at Maturity.

Seeds which germinate at once at maturity, of course, require no special methods of treatment to cause germination. Unfortunately, the nurseryman does not handle many seeds in this group. Seeds of many herbaceous annuals and perennials belong here, but few of the woody plants. Notable examples include seeds of soft maples, summer-fruiting elms and white oaks.

Immature Embryo.

Seeds that possess an immature or incompletely organized embryo are not fully developed and require additional food or time, or both, to develop. At least two variations occur within the group. (1) Seeds possessing a small or poorly developed endosperm or lack one entirely. Such seeds usually do not possess sufficient stored food to bring about the development of the embryo and the growth of the seedling above the soil surface. The development of such seeds may be stimulated by sowing them in flasks on an agar medium containing nutrient materials. Seeds of orchids are handled in this way, but the nurseryman is seldom confronted with any seeds of this nature. (2) Seeds possessing an immature or incompletely organized embryo, but having enough food available to foster embryo development in time. Seeds of Ilex opaca, Ginkgo biloba and Hedera helix are in this group. Little work has been done on methods of handling seed of ginkgo and English ivy for best results. Fall sowing may be practiced with favorable results, or the seeds may be stratified over winter in sand and peat at a temperature of 40 to 45 degrees Fahrenheit. It is not necessary to stratify seeds of ginkgo, but those of hedera will be aided.

Ives in an article published in 1923 states that the rate of germination of seeds of Ilex opaca, American holly, in nature is very low and this poor and delayed germination is due (1) to immaturity of the embryo and (2) to mechanical resistance of the structure inclosing the embryo. The latter of these two factors is probably of more importance and a difficult one with which to cope. Ives suggests drying the seeds in an oven at a temperature of about 100 degrees for six hours and then cutting away the obstructing coats. This would hardly be practical on a commercial scale. Watering the seeds with a 5 per cent dextrose solution was the only means Ives found of hastening the reaction. This sugar solution probably acts in preventing desiccation, promotes decay of the structures inclosing the embryo and furnishes food for the embryo. Since this procedure is not easily followed by commercial propagators, it may be well to try stratifying the seeds in a fairly moist medium of sand and peat for a period of about two months at a temperature of 65 to 75 degrees. This might aid in the decay of the seed coats and favor development of the embryo. This has not been proved by scientific research, so far as I know, but it may be worth a trial on the part of some nurseryman.

Hard Seed Coat.

With few seeds is the nurseryman confronted with the factor of hard seed coats alone. More often such seeds also require a rest period or possess an immature embryo. Nurserymen often deal with leguminosæ seeds, such as those of honey locust, Kentucky coffee tree, black locust and some pines, with which delayed germination is entirely or mainly dependent upon the hard seed coat. Often the seed coats of black and honey locust can be weakened sufficiently by pouring boiling water over the seeds

and letting them soak for twelve to twenty-four hours before sowing. Good germination has been secured with black locust seeds by soaking them in concentrated sulphuric acid for one hour. This should be followed by carefully washing them in running water. A good germination has been secured with seeds of Kentucky coffee tree by first soaking them in water for twenty-four hours and then soaking in concentrated sulphuric acid for one to two hours. Seeds should be thoroughly washed when taken from the acid. By following this method, as high as eighty-six per cent germination has been secured in three to fourteen days by the forestry department of Ohio State University. It should be remembered that seeds should not be soaked in sulphuric acid long enough for the acid to reach the embryo. It is wise to treat a few seeds first to determine the length of the treatment necessary sufficiently to weaken the seed coat and allow germination.

Seeds of hard pines usually show prompt, uniform and complete germination if they are stratified in fairly moist sand and peat at 40 to 45 degrees for two months. It is an advisable practice with most seeds that possess a hard seed coat to prevent excessive drying, since this only aggravates the detrimental condition.

Require Rest Period.

The exact cause of rest in seeds is not clearly understood, but the idea expressed by Howard in 1915 that in some way the cell membranes became impervious to enzymes, thus hindering their reaction, seems to be significant. Much research work has been done concerning the changes that take place during the rest period. Pack listed fourteen changes taking place in juniper seeds in his work in 1921. Among the more important are the increase in acidity, dispersion of stored fat, an increase in amino acids and proteins and an increase in catalase activity.

The one factor that seems to hasten afterripening of most seeds is stratification at cold temperatures of 40 to 45 degrees. The length of time required for these changes to take place varies greatly with different seeds. For the majority it varies from two to four months. Since information on this factor is contained in various publications, an attempt will be made to gather it in table form in a forthcoming article.

Pack showed with seeds of Juniperus virginiana that a low temperature was as essential to germination as afterripening. About 100 days was necessary for afterripening at 40 degrees, but a more significant fact is that if seeds are placed at temperatures above 60 degrees, germination is greatly delayed or prevented entirely. Germination was most rapid when left at a temperature of about 40 degrees. This work of Pack's would suggest that nurserymen possibly should sow juniper seed during the winter so that the rest period will be completed and germination take place while the soil is still cold. Nurserymen located in the milder localities could follow this procedure without much difficulty. Beds might be mulched heavily in the fall to enable their preparation in midwinter.

Combination of Factors.

The work of Barton, Flemion and Giersback at the Boyce Thompson Institute during the past two years would indicate that a combination of treatments is necessary to hasten germination of many seeds, since their delayed reaction is due to factors of hard seed coats plus a distinct rest period or immature embryo. Because these conditions exist, it is not surprising that a combination of treatments, depending upon the particular nature of the seed, causes the desirable results. Thus Barton working with seeds of tilia, Flemion with seeds of snowberry and Giersback with seeds of cotoneaster found that all would react to treatments which first weakened the seed coat, followed by treatments favoring maturity of the embryo and the breaking of the rest period. They found that if seeds could be stratified in moist sand and peat for three to four months at 60 to 70 degrees and thereafter held at temperatures of 35 to 41 degrees for three to six months, germination would be hastened and increased.

The storage period at the higher temperature may be supplanted by soaking the seeds in concentrated sulphuric acid for twenty to seventy-five minutes. Nurserymen find practical applications of this information in a number of ways. If seeds can be secured early enough to obtain the initial storage before cold weather, the entire period may progress outside. If the seeds are obtained in late fall, the initial period may be secured by stratifying the seeds in flats in the greenhouse at the necessary temperature, which can be followed by placing the flats in coldframes during late winter. If seeds are obtained during early winter, the sulphuric acid treatment may be used, still allowing sufficient time for the storage period at the low temperature, which may be secured in coldframes or storage buildings.

In conclusion it may be said that if the nurseryman is able to classify seeds of woody plants into one of the groups mentioned, he may be able to formulate rather definite opinions as to the best methods of handling them to secure favorable results. His endeavors will be aided by further scientific work to determine the requirements of individual seeds.

COATING PLANTS WITH WAX

Following earlier reports on experiments regarding the use of emulsified paraffins and vegetable waxes as plant protectors, data on tests conducted during the past year in the department of horticulture at Ohio State University are given in the "Nursery Notes" sent out this month by L. C. Chadwick. After description of the tests, he presents the following conclusions:

Treatment of plants with emulsified paraffin and vegetable wax reduces transpiration under controlled conditions.

Such treatments will not overcome poor methods of production and transplanting of plants.

Plants normally difficult to transplant may be aided in recovery by coating their tops with paraffin or wax. Treatments do not seem to aid plants easily moved, plants potted to be carried under greenhouse conditions, or small lining-out stock when sufficient moisture is present in the soil.

Evergreen cuttings that root slowly may be aided by treating with paraffin or wax. Dipping bundles of hardwood cuttings in paraffin or wax before storage may aid in the development of the cuttings the following spring.

The results of tests indicate that the transplanting of medium to large narrowleaf evergreens bare root and treated with paraffin or wax is not a practical method of handling.

August-Blooming Perennials

More Unusual Hardy Plants That Provide Bloom in Late Summer Are Described by C. W. Wood

To continue the line of thought started in the November 1 issue, a few more or less unusual August bloomers will be examined.

Corydalis.

Five species of corydalis that I have grown are of importance because of their long blooming season, all fine plants extending their flowering period from spring or early summer until frost. And not a single one of these plants is common in gardens or nurseries of this country. It would appear from the foregoing that nurserymen are overlooking a wonderful opportunity here, but further investigation will show that these plants, especially in the case of the best species, are not easily transplanted and they do not take kindly to pot culture. There is a chance here, however, for the neighborhood grower who can sell small plants, and the mail-order dealer can at least sell seeds if he cannot work out a satisfactory way to handle the plants.

The species of long-blooming habit, as I have had them are as follows: Cheilanthifolia, lutea, ochroleuca, thalictrifolia and Wilsonii. The first two of these are something of shade lovers, though they do well in sun, and the others seem best in a sunny wall. C. lutea is one of the best plants in my garden, comely from spring until winter in its ferny foliage, which is glaucous, and is seldom out of flower. Seeds are slow to germinate, the best procedure being to sow in an outdoor frame in fall.

Helianthus Orgyalis.

Most of the hardy sunflowers can be depended upon for August bloom, but many of them are too coarse to suit discriminating gardeners, and others spread too rapidly to be admitted to the garden. Neither of these faults will be found in Helianthus orgyalis, a species from the plains of Nebraska and southward. The foliage of this plant, contrary to the general rule among the sunflowers, is really ornamental, well grown plants making tall spires of long, drooping leaves, each stem ending in a spike of small, pale yellow sunflowers, the spike of well done plants often exceeding three feet in length. The entire plant is about six feet in height as usually grown, but rich soil will produce a 10-foot plant, when the effect is truly inspiring. This is a good plant for the shrub border or as a background for the perennial border, starting to bloom in August here in Michigan and continuing into October. It may be grown from seed or endlessly multiplied by division of the stools.

Hemerocallis.

The day lilies are a story in themselves and will be treated more fully later. But right now we should be reminded that they, especially some of the new hybrids, are of great value in the August landscape. The demand for them is the marvel of the plant world, a condition that should interest all commercial plant growers.

Iris Dichotoma.

Iris dichotoma, unique in its August blooming, is another good selling item that should not be overlooked by the wide-awake plantsman. It has been one of my best sellers for years, the beauty of it being that the plant can be moved with safety almost any month of the year and even while in flower. As most local sales are made when plants are in bloom, the latter feature is an important item.

Iris dichotoma is distinctive in many ways other than its blooming season. The flowers open in the afternoon, remaining open until the following morning, a process that is repeated all during August and continues into September. Growers in the latitude of Chicago report their first bloom during the latter half of July, with a corresponding period in August. The flowers are not large as iris flowers go, but they are produced in abundance and at a time when their lilac color is fully appreciated. The fan-shaped cluster of leaves ten to twelve inches long is another distinctive feature of this outstanding iris.

Its culture is the easiest possible, the main requirement being for a light, well drained soil. It is not at all unlikely that the preceding sentence answers the question of the plant's duration. A search of the literature will reveal the fact that it is often spoken of as a biennial, while, as a matter of fact, it is invariably perennial as it grows in the nursery, 8-year-old plants being as vigorous as the yearlings. A search of the literature also reveals the fact that most writers who call it biennial are operating a heavy soil, a fact that may explain its short life under their conditions. Here in Michigan we grow it from seeds by the hundreds every year, transplanting to the open field every month that the soil is free of frost. Incidentally, it comes as readily as radishes from seed, though the intensity of the lilac coloring varies a little. Particularly desirable shades may, however, be propagated by division as in other irises. My opinion of the plant is that it is a true perennial if given a light, well drained soil in full sun. Undoubtedly it is a good item for the neighborhood grower.

Jasione.

On the other hand, most of the jasiones, which are usually listed in catalogues as perennial, with the exception of the shepherd's-scabious, Jasione perennis, act here as annuals, biennials or short-lived perennials. Jasione humilis is a case in point, being reported as perennial, while it is practically monocarpic here. The two mentioned, together with J. montana, which is also biennial here, are all good July and August bloomers and should sell well in sections where they are really perennial. They are all blue-flowered plants of the campanula family, with their flowers in heads with an involucre and many other characteristics of a composite. They are of easy culture in any garden soil that is well drained.

Lysimachia.

All of the loosestrifes that I have grown are summer bloomers, though most of them stop with the passing of July. Of the latter, L. Henryi and L. pseudo-Henryi are desirable for the grower of uncommon plants. They are both spoken of as bog plants, but

will do quite well in the border or rock garden. The first-named produces its yellow flowers on 10-inch to 12-inch plants (shorter in dry situations) and the other has its bright golden flowers at the end of prostrate stems. Another Chinese species, listed in European catalogues as L. violacens, has departed from the usual yellow or white of the race and gives us a good purple.

But the plant of most value to our present inquiry is L. clethroides, a 2-foot plant under good culture, with long, terminal spikes of starry white flowers from July until September. It is a valuable cut flower, as well as one of the most satisfying border plants. The foliage alone is ornamental and particularly so in autumn, when it takes on beautiful fall tints. Lysimachias may be propagated from seeds or by division, the latter preferably in early spring in northern states, but late autumn division may be done where the winters are not severe.

Lythrum.

The lythrums, like lysimachias, are lovers of moisture and are best when assured of a generous supply throughout the year, but do well in a rich border soil, appearing at their best when grown among shrubs. The most popular species, L. Salicaria and its varieties, are stately plants, growing up to five feet in height when well done and blooming from July to September. In the type the flowers are a rather undesirable shade of purple, but in variety roseum they have assumed a pretty shade of rose, while better yet is Perry's variety with its long spikes of cherry red blooms. Both of the latter kinds are good property for the local grower, attracting attention to themselves at a time of the year when so many plants are in a ragged condition. Propagation is from seeds or divisions.

Œnothera.

A number of evening primroses are, owing to the large size of their flowers, spectacular plants and, because of their showiness, have become favorite garden plants. The foregoing is true of cæspitosa, fruticosa and missouriensis, all deservedly popular plants, but I should like, at this time, to call attention to serrulata. As showiness is usually measured, this plant can never come up to that standard, but a spectacular plant is not always wanted, and this one is good enough to win on its other merits, such as long-blooming habit, good color, size of plant, etc. Unlike most shrubby evening primroses, serrulata does not generally winterkill at the tips, though it may do so to a very limited extent in the colder parts of the country during extremely cold winters. It has never shown any winter injury here where it has endured temperatures of 40 degrees below zero. We should expect this hardiness, however, for it grows naturally in the plains country as far north as Manitoba. It apparently varies not a little in height, one grower in Iowa reporting 2-foot specimens, while here in northern Michigan it is seldom over fifteen inches high, and a Colorado grower gives it as a 10-inch plant. Regardless of height, it is a good item, giving freely of its inch-wide or less (usually less) lemon yellow flowers from June until September. This is not all of the good evening primroses, of course, but ninety or more species included in the genus as defined by botanists would require more space than is available here. A more extended treatment will be attempted later.

Linaria.

One can always look upon a toadflax as being an August bloomer and not be fooled once in a dozen times. This will hold true through a long list of species, including æquitriloba, alpina, Cymbalaria, hepaticæfolia, origanifolia, pilosa, repens and triornithophora. Not only are these August bloomers, but they may be depended upon to produce color from spring until fall. None of the ones named, with the exception of L. origanifolia, can be depended upon to go through one of our severe northern winters, but they usually self-sow with freedom and so maintain themselves in the garden from year to year. In our northern nurseries they must be grown in a protected frame if we are to have plants for spring sales. Propagation is by division, cuttings or seeds.

ABIES CONCOLOR.

(Concluded from page 2.)

These trees should be planted in a rich, moist soil, but one that is well drained, particularly in winter. Also in setting specimens, especially small ones, nurserymen should allow plenty of room for development, as the plant's rapid growth will make any crowding apparent much quicker than in the case of the slow-growing blue spruce.

Propagation is usually by seeds, which germinate slowly and are sometimes of poor fertility. They can be sown as soon as ripe, stratified over winter or stored dry over winter and sown in spring. Trees of exceptionally fine color can be propagated by grafting. Use veneer grafts and, for scions, only upright branches or leaders, as when side branches are employed, unsymmetrical trees will result.

With a little well directed publicity, including the display of some fine specimens in the show grounds, nurserymen can easily popularize this valuable conifer.

BANDS FOR CANKERWORM.

Isolated trees may be successfully protected from cankerworms by banding on or before November 1, states W. E. Britton, Connecticut state entomologist. Cankerworms are those small, green or blackish measuring worms with stripes lengthwise of the body that stripped the trees of foliage last spring. Now is the time to begin campaigning against next year's crop of cankerworms. Since last June they have been in the ground under the trees, but warm days in November and December will bring them out transformed into adult moths. The females are wingless insects and climb the trees to lay their eggs. Sticky bands around the trunks at this time, and in April and May when the eggs hatch, have been found effective in holding cankerworms back.

Dr. Britton says that the bands may be purchased ready-made or may be manufactured at home. The experiment station devised the following successful method of banding trees:

Encircle the trunk with a strip of cotton batting about two inches wide. This will fill the crevices of the bark and keep moths from crawling under the band. Draw a 5-inch wide strip of single-ply tar paper taut over the cotton and tack in place. Paint the upper half of the tar paper with tree Tanglefoot applied one-quarter inch thick, using a paddle for spreading. Keep this thoroughly sticky until January and again in April and May. If the band is covered with leaves and insects from time to time, it will need to be stirred up with a notched paddle, or repainted. Bands should be placed about six feet aboveground so that they will not be in the way of animals or people. While it is possible to apply

Tanglefoot directly to the bark of the tree, Dr. Britton warns that this will permanently disfigure the trunk.

Moths that are not caught in the Tanglefoot will lay egg masses below the band or on it. When the worms come out in spring, the bands must be painted again to prevent the creatures from climbing up to the leafy part of the tree.

While banding is effective for isolated trees, Dr. Britton does not feel that it is so successful when many trees stand together, their branches interlacing. Sprays of lead arsenate applied in May will also control canker-worms.

EUROPEAN ELM SCALE.

The beauty of the residential streets of many of the cities of the interior valleys of California is due, to a great extent, to the enormous old elm trees, planted a generation ago, which completely shade the streets during the entire summer. In fact, their value cannot be estimated in dollars and cents, as was learned several years ago when the elm leaf beetle first found its way into California and killed thousands of the trees before the people realized their destructiveness and what the loss of the trees meant to their comfort. Fortunately, practically all the cities have kept the beetles under control successfully for the past several years.

More recently, the European elm scale, Gossyparia spuria (Modeer), has become extremely abundant in some districts. For example, in the city of Sacramento during portions of the summer people dare not park their automobiles under the elm trees because of the great quantity of honeydew that drips onto them. In some cases this honeydew becomes so heavy on the pavements that the hazards of automobiles' skidding are increased to such a degree that it is extremely dangerous to drive on those streets.

It has been the practice for the past few years for the city park department to spray the elms each spring for the control of this pest. A combination insecticide consisting of five per cent commercial lime-sulphur solution and five per cent dormant oil emulsion has proved to be the most satisfactory lethal agent. However, this cannot be used in close proximity to houses or automobiles because of the disastrous effects of lime-sulphur on paint and of oil on stucco.

In coöperation with D. B. Mackie and W. B. Carter, of the entomological division of the California state department of agriculture, some experimental spraying with Loro was carried on last spring in Sacramento. February 27, Loro at 1-400 and at 1-800 with a dormant emulsible oil at 1-200 was applied to heavily infested trees. Preliminary examinations ten days later indicated excellent control with Loro at 1-400, but only fair at 1-800 dilution. Consequently, March 11, another test was made, using Loro at 1-600 together with a dormant emulsible oil at 1-200.

Mortality counts from these tests, two weeks after application, as determined by Mr. Carter, showed 89 per cent males and 84 per cent females dead from the use of Loro in a concentration of 1-800; 98 per cent males and 97 per cent females from a concentration of 1-600, and 99 per cent males and 97 per cent females from a concentration of 1-400.

It will be seen from this that Loro at 1-600 with a small amount of dormant emulsible oil (one-half per cent) gave a satisfactory control. With such a small amount of oil present there should be no fear of injury to paint, stucco or automobile finishes. In fact, it appears that there has been a very definite place found for Loro in the control of this pest of elm trees.

Co-operate in Jersey

Nurserymen's Association Gains Prestige and Publicity by Civic Undertakings

Several noteworthy projects achieved through coöperative efforts have brought prestige and good will to the twenty-six members of the North Jersey Metropolitan Association of Nurserymen during the past season. Among their accomplishments were the planting about the Passaic county courthouse, Paterson, N. J.; the planting around a model home given as a prize at the Paterson better housing exposition, an entrance planting to the exposition and a display and booth at the exhibition.

The association's part in the better housing program was instigated at an executive meeting April 22, when the purpose of the exposition was explained. At that time the association had just adopted an emblem under which it planned to do some advertising, the intention being to so familiarize persons with it that they would know at a glance what the emblem represented. In view of this situation, the exposition appeared to the executive committee to offer an excellent opportunity to get some valuable publicity.

So the executive and planting committees visited the Paterson armory, where the exposition was to be held, and after making an inspection decided to landscape the entire entrance area, which amounted to about 1,100 square feet. Then on May 5, these same two committees, together with the architect of the prize model home, visited it and decided to landscape the grounds about the house.

At the meeting of the association May 8, the planting committee made a report to the members and submitted the data it had compiled, also a list of the material that would be needed and an outline of the work that would have to be done. "There," says William Hallicy, Clifton, N. J., the secretary, "is where it would do your heart good to see the way the men responded to put this thing across."

The material used in landscaping the model home included the following: Two Norway maples, one cut-leaved birch, two Mugho pines, one Austrian pine, two Cannart junipers, one Chinese juniper, four Pfitzer's junipers, one Sargent juniper, four golden plume cypresses, one golden thread cypress, three common arbor-vitæs, three pyramidal arbor-vitæs, three Rosenthal arbor-vitæs, two Canadian hemlocks, one specimen and twenty plants for a hedge of the Julianæ barberry, ten Japanese barberries, two red-leaved Japanese barberries, four evergreen barberries, three evergreen bittersweet, two Magnolia Kobus, five Paul's Scarlet Climber roses, two corkbark evonymuses, six deutzias, two rose weigelas, one French lilac, one rose of Sharon, one regal privet and sixty rock garden perennials. The total cost of the specimens was $225.75.

Other materials, including 2,000 square feet of sod, thirty-six yards of topsoil, one yard of screened compost, stones for a wall and flagstones, came to a total cost of $258. The expense of making the lawn was placed at $150, making a grand total of $703.75 as the cost of converting the barren filled-in piece of land into a beautifully landscaped area. A planting guide for the landscape job, together with an itemized list of costs, was handed out to interested visitors at the model home while it was open for inspection.

May 23 the members turned out in great style to plant the model home. It was no easy task, either, for besides the plant material to be placed, there were thirty-six yards of topsoil to be graded and 2,000 squares of sod to be laid. However, many willing hands make light work of even the biggest job; so the task, started at 8 a.m., was completed by 5 p.m. The association's emblem was displayed where it was viewed by thousands who visited the model home, each person hoping he would be the lucky one to win it.

Eleven members on May 27 decorated one of the member's trucks and entered it in the exposition parade. The float was honored by being given the leading position in the parade, which officially marked the opening of the model home.

At a meeting of the association June 5 there was a final discussion regarding the disposition of the 1,100 square feet of floor space at the exposition that the group had agreed to use. As a result all members turned out on June 9 and staged a beautiful display of plant material and set up an attractive booth in the armory at Paterson. The association's emblem was again prominently displayed.

In commenting on the projects, Secretary Hallicy says, "All in all, the venture was a great success. First and foremost, it showed what a group can put across when organized. Financially, quite a bit of business has been traced to the booklet that was handed out at the booth. And last but not least, ever so many of our customers who have seen the emblem on our trucks have associated it with the model home or the courthouse planting in Paterson. It has proved a source of good advertising and not very expensive, for we all had the material on hand and the cost was the labor we all put in. I have a hunch, though, if you ask any one of the members about the work, he will tell you first about the good time we all had."

ALTHÆAS AT THE MORTON ARBORETUM.

Of the woody plants blooming in late summer the shrubby althæa, or rose of Sharon, Hibiscus syriacus, with its variously colored hollyhock-like flowers, is perhaps the most conspicuous. Not new by any means, having been introduced from China and India before 1600, the species has nevertheless failed to receive, in the middle west at least, the attention it merits, according to E. L. Kammerer, botanist at Morton arboretum. Narrow in form, with erect, almost vertical branches, the althæa is suited to a variety of uses. By removing all but a central shoot, the species may easily be trained into a decorative specimen tree. In a close planting, the upright habit of the plant fits it admirably for informal hedge use. It is equally good massed in shrubbery borders, but should be kept in the background because of its extremely tardy leafing habit. However used, it is worth while for its late flowering season, August and September, and clean-looking, bright green foliage. Culturally it is not difficult, although it must have a partly shaded, moist location, well protected from winter winds. In the open its branches will winterkill. Other disadvantages of the genus are the tendencies of its

withered flowers and seed capsules to persist indefinitely on the branches.

Considering the numerous horticultural varieties of the althæa available, the collection at the Morton arboretum is far from complete. Those growing there may be considered as being representative of the various color groups, however. They are:

Anemonæflorus, double flowers, carmine in bud, opening light pink; the outer petals blotched with carmine.

Ardens, semidouble, pale magenta flowers fading to blue; base of petals blotched carmine on the inside; early.

Boule de Feu, very double, deep rose magenta blooms; late.

Cœlestis, medium-size single violet blue flowers, blotched carmine at throat.

Jeanne d'Arc, yellow in bud, opening into double white flowers; free-flowering.

Lady Stanley, double white flowers with carmine centers; early.

Rubis, large single flowers of dark rose magenta with carmine centers; stamens prominent, bright yellow.

Snowdrift, a fine, large-flowered clean single white.

TREE NUTS TO REACH PEAK.

Production of tree nuts will reach a new peak this year, according to the bureau of agricultural economics in its annual outlook report. These nuts include walnuts, pecans, almonds and filberts. About 107,000 tons is the expected production.

The outlook is for a continuation of the upward trend in domestic production, a further increase in consumption of cashews and keener competition of pecans with other nuts. Any changes in duties on imported nuts and the adoption of new types of import restrictions also would be important in the outlook.

A major part of the decrease in consumption of nuts in recent years can be attributed to the decline in consumer income. Therefore, an increase in consumer income in the next few years will probably result in increased consumption, although the predepression level may not be reached.

Barring unforeseen abandonment of acreage or pulling of trees, the total bearing acreage in the tree nuts in the United States will increase considerably during the next few years, and a total production of about 100,000 tons may become typical rather than exceptional, says the bureau. Total production in the five years 1930-34 averaged 79,800 tons.

Lower prices than heretofore, at given levels of consumers' income, are to be expected, if the increased production is to be moved.

Quarantine Officers Meet

Pass Resolutions Favoring Standardization of Nursery Inspection and Certificate Issuance

A conference of state plant quarantine officers, held at the Congress hotel, Chicago, November 5 and 6, adopted several resolutions concerning plant quarantine matters of interest to the trade. Thirty-six of the forty-eight states were represented at the conference.

The conference was the first one of its kind held by plant quarantine officials of the states in ten years. It was called by the National Plant Board, of which Prof. W. C. O'Kane, Durham, N. H., is chairman and Dr. R. W. Leiby, Raleigh, N. C., is secretary-treasurer. Dr. G. A. Dean, Manhattan, Kan., is vice-chairman.

The National Plant Board consists of eight representatives, two of which are elected by each of four regional plant boards. The federal bureau of entomology chief, L. A. Strong, assisted in calling the conference and had six of his associates in attendance.

The conference lasted two days and included an extensive series of discussions on quarantines relating to insects and plant diseases, the problem of uniformity of standards of inspections of nurseries and their certification and the possibility of nursery stock's moving under a standard shipping tag approved by the federal bureau of entomology and plant quarantine. The last is a subject which has been frequently discussed by plant quarantine workers, and it is expected that something tangible along this line will eventually result from the conference, although the details remain yet to be worked out by the National Plant Board in coöperation with the four regional plant quarantine boards.

Attending the meeting was Paul Stark, chairman of the committee on plant quarantines of the American Association of Nurserymen.

Resolutions were presented by a committee consisting of J. H. Montgomery, E. N. Cory, F. N. Wallace, A. C. Fleury and Dr. G. A. Dean.

The committee presented an adverse report on a resolution regarding the importation of narcissus bulbs referred to it by the conference and introduced by quarantine officers from Washington and Oregon. The following substitute resolution was presented by the resolutions committee and adopted unanimously by the conference:

Whereas, it is recognized that foreign-grown narcissus and iris bulbs are generally more or less infested with nematodes, and so that American bulbs and other horticultural interests may be protected from exposure to infestation,

Be it resolved by the state plant quarantine officers assembled in conference at Chicago, November 6, 1935, that the United States Department of Agriculture require as a condition of entry, under the provisions of federal quarantine 37, that foreign-grown narcissus and iris bulbs, not known to be free from nematodes, be given such treatment as will eradicate such nematodes before the bulbs may be released for planting.

The attitude of the conference on the Japanese beetle quarantine, extension of which is being considered at Washington, was set forth in this resolution:

That the federal Japanese beetle quarantine should be maintained on the present defined infested areas and be extended only to such recently discovered infested areas as are immediately contiguous thereto, and

Be it resolved further that with respect to the recently located isolated and restricted areas, such areas be not placed under quarantine, provided that adequate and suitable suppressive measures be instituted and continued by the federal authorities and/or the quarantine agencies of the affected states.

Definite steps toward uniform standards of inspection and issuance of certificates were presaged in the following resolutions:

Whereas, there exists a lack of uniformity with respect to the practices and procedures followed with regard to the conditions and requirements attached to the shipment of nursery stock interstate, and uniformity and standardization of procedure are most desirable in order to facilitate and at the same time safeguard, from the pest-risk standpoint, such plant transportation and

Whereas the plant quarantine officers of the various states assembled in conference at Chicago, November 6, 1935, recognize the necessity for action of a constructive character for the development of a program calculated to accomplish this objective, now therefore

Be it resolved that it is the sense of this conference that the National Plant Board shall initiate the necessary steps to create a closer relationship, a coördination between the several states, and between the states and the federal plant quarantine organization, and

Be it resolved further that the National Plant Board be requested to coöperate with the bureau of entomology and plant quarantine in formulating and submitting to the several states a set of standards which shall serve as the basis for the inspection of nurseries and the issuance and use of inspection certificates to accompany interstate nursery stock shipments, with the expectation that ultimately those states adopting and following such standards will be authorized to issue federal certificates of nursery inspection to accompany interstate nursery stock shipments.

On its bid of $7,910.90, the Hillenmeyer Nurseries, Lexington, Ky., received from the Kentucky state highway commission a contract to do miscellaneous planting and minor construction work on an 8-mile stretch of the Louisville-Shelbyville road in Jefferson county.

Norb Balzer, nurseryman of Spokane, Wash., recently addressed the members of the Spokane Garden Club, talking on two subjects—"Preparation of Soil for Evergreens and Shrubbery" and "The Arrangement of Shrubbery and Evergreens for the Average Home Grounds."

The supply of fruit trees available for planting is said to be less than it has been during the past forty years. During the depression, demand for trees was reduced and few were planted. The severe winter further depleted the stocks of eastern nurserymen, and the drought hit the midwest and the far-western growers.

IOWA NURSERYMEN MEET.

The fifteenth annual convention of the Iowa Nurserymen's Association will be held in the Memorial Union building on the Iowa State College campus, Ames, Ia., November 22 in conjunction with the meetings of the Iowa Horticultural Society scheduled there November 21 to 23. The nurserymen's session will be opened at 9:30 a. m. in room 206 by the address of the president, A. J. Bruce, Des Moines. C. C. Smith, Charles City, secretary-treasurer, will then present his report.

Edward Auten, Jr., Princeville, Ill., is scheduled to address the group at 10 a. m. on "Hybridizing Peonies to Extend the Blooming Season." Henry Ness, assistant state entomologist, Ames, will talk on "Nursery Inspection Problems." At 11:30 o'clock there will be an executive session.

A round-table discussion of nursery topics will prevail at the noon luncheon. Besides, the auditing and nominating committees will make their reports, and the election of officers will close this session.

A joint horticultural meeting will be held in the afternoon, the chief features of which will be an address by Prof. B. S. Pickett, Ames, head of the horticulture department at the college and president of the American Pomology Society, whose subject will be "The Need for Concentrated Action in the Sale of Deciduous Fruits;" a talk by Dr. E. W. Lindstrom, Ames, head of the genetics department at the college, on "Breeding for Disease Resistance," and a review of "Seventy Years of Horticulture in Iowa," by E. R. Harlan, Des Moines. The joint horticultural banquet will be held at 6 p. m. in Great hall of the Memorial Union.

MINNESOTA DATES SET.

The dates for the convention of the Minnesota State Nurserymen's Association have been rather definitely set for Monday and Tuesday, December 16 and 17, the sessions to be held at the Lowry hotel, St. Paul, Minn. A local committee on arrangements has been appointed as follows: Gordon Bailey, of the J. V. Bailey Nursery, St. Paul; R. D. Ruedlinger, of the Ruedlinger Nursery, Minneapolis, and E. E. Johnson, of the Rose Hill Nursery, Minneapolis.

Details of the program are to be developed shortly, but it is planned to have a two-day business session, with a banquet and entertainment following the first day's meeting. The association has fifty-six members within the state and eight associate members from outside. All members of the nursery trade are welcome to attend the convention, according to W. T. Cowperthwaite, St. Paul, secretary, who states further that they can be assured of meeting representative nurserymen from Minnesota and neighboring states and of enjoying a practical and helpful program.

NORTH JERSEY MEETING.

At a special meeting of the North Jersey Metropolitan Association of Nurserymen in the county courthouse at Hackensack, N. J., the planting committee reported that it had contracted to plant the entire eastern part of the courthouse and the heating unit. Arrangements were made to place orders for the needed material with various members, and it was planned to do the planting October 31. On that date all hands turned out in great style and finished the job. The planting committee is to be congratulated both for obtaining the contract and distributing the orders among the membership. The project goes to show what an organized group can do.

A regular meeting of the group will be held November 15 at the Passaic county courthouse, Paterson, N. J. At this session it is hoped to have Raymond A. Mulhearn, of the Federal Housing Administration, give a talk.

William Hallicy, Sec'y.

DINE AND MEET AT TWIN CITIES.

During the winter, regular meetings of the Twin City Nurserymen's Association are held on the second Wednesday of each month, the sessions being scheduled for dinner and alternating between Minneapolis and St. Paul, Minn. The first fall meeting will be held at Wade's restaurant, 1110 West Lake street, Minneapolis, at 6:30 p. m. November 13.

The annual meeting is held in December, at which time the election of officers for the coming year takes place. The present officers are: President, H. S. Reed, of Holm & Olson, Inc., St. Paul; vice-president, H. F. Baker, Minneapolis, and secretary-treasurer, E. E. Johnson, of the Rose Hill Nursery, Minneapolis. Twenty-seven firms are now represented in the membership.

MANNING TO HEAD KELSEY'S.

With the death October 20 of Frederick W. Kelsey, founder and head of the F. W. Kelsey Nursery Co., New York, L. E. Manning has been named president of the firm. Mr. Manning for the past twelve years was general manager and vice-president. The business will be continued with the same policies as heretofore and without other changes in management, it is announced.

BULLETINS RECEIVED.

"The Gypsy Moth," by W. E. Britton, of the Connecticut agricultural experiment station, New Haven, Conn. Bulletin No. 375; dated August, 1935. The booklet contains twenty-eight pages covering the distribution abroad and history in America, the damage and destruction of trees, life and habits, natural enemies, imported parasites, prevention of spread and control measures of the gypsy moth. Profusely illustrated with half-tones, charts and line drawings.

ROSE REGISTRATIONS.

Applications for registrations of the following new roses have been approved by the registration committee of the American Rose Society:

Climbing Julien Potin. Climbing hybrid tea. Discovered by J. A. Bostick, Tyler, Tex. Flower is described as large, long-pointed, primrose yellow in color and extremely fragrant. Flowers bloom singly on long stems and are produced at intermittent periods throughout the season.

General Robert E. Lee. Hybrid tea. Sport of Edith Nellie Perkins. Discovered by J. A. Bostick, Tyler, Tex. Flower is described as golden yellow inside, with a light pinkish tint on the outside of the petals. It is slightly fragrant, is a continuous bloomer and is considered superior to Edith Nellie Perkins, due to its unusual color and the fact that the plant is quite free from disease.

Climbing Dorothy. Climbing hybrid tea. A sport of Dorothy Page-Roberts. Discovered by J. A. Bostick, Tyler, Tex. Flower is described as exactly similar to its parent. It is claimed to be an intermittent bloomer throughout the season.

Cerise Talisman. Hybrid tea. A sport of Talisman. Discovered by Clark's Rose Nursery, Jacksonville, Tex. The flower is described as the same as Talisman except in color, which in this rose is cerise. It is claimed to be valuable because of its perfect cerise color on a regular Talisman plant, growing and blooming as freely as Talisman.

Climbing White Columbia. Climbing hybrid tea. A sport of Climbing Columbia. Discovered by Clark's Rose Nursery, Jacksonville, Tex. Flower is described as double, four and one-half inches in diameter, having sixty petals, and creamy white in color, with the tips of the outer petals pink. The plant is claimed to be hardy and thornless and is said to be an intermittent bloomer during the season.

Betty Grace Clark. Hybrid tea. A sport of Marie Adelaide Grande Duchesse de Luxembourg. Discovered by Clark's Rose Nursery, Jacksonville, Tex. Flower is described as two shades yellower than Luxembourg, being an orange yellow when mature, with the back of the petals streaked with red. It is five inches in diameter and has twenty-five petals. It is said to be a continuous bloomer.

Springtime. Hybrid polyantha. Originated by Howard & Smith, Montebello, Cal., and introduced by Henry A. Dreer, Inc., Philadelphia, in 1935. It is described as a seedling of Miss Rowena Thom x an unnamed seedling. The ovoid buds open to cup-shaped flowers, two and one-fourth inches in diameter, each with ten petals of wild rose pink having a white center. Flowers are borne in clusters and are valuable both for massing in the garden and for cutting. It is a continuous bloomer.

Lovely. Hybrid tea. Originated by Howard & Smith, Montebello, Cal. To be introduced by Henry A. Dreer, Inc., in 1936. The parentage is given as two unnamed seedlings. The high-centered flower is said to be three inches in diameter, has twenty-eight petals and is carmine pink. It is violet-scented. The plants are described as two feet high and as continuous-blooming.

The Doctor. Hybrid tea. Originated by Howard & Smith, Montebello, Cal. To be introduced by Henry A. Dreer, Inc., in 1936. A seedling, the progeny of two unnamed seedlings. Flower is described as of the Killarney type, with flowers three and one-half inches in diameter, with twenty-three petals, being satiny pink in color and having a fruity fragrance. Plants are bushy, are eighteen inches in height and bloom continuously.

Glowing Carmine. Hybrid tea. Originated by Howard & Smith, Montebello, Cal. To be introduced by Henry A. Dreer, Inc., in 1936. Said to be a seedling of Miss Rowena Thom x an unnamed seedling. Flower is of the type of La France, globular, three and one-half inches in diameter, with forty petals, being carmine in color, with a moderate fragrance. Plants are described as of open habit, are three feet tall and bloom continuously.

Adorable. Hybrid tea. A sport of Columbia discovered by Henry Eichholz, Waynesboro, Pa. Flowers are described as flesh pink in color, four inches or more in diameter, with twenty or more petals. It is said to be similar to Columbia, but is different in color and more floriferous than its parent.

Avalon. Hybrid tea. A sport of Duchess of Atholl. Discovered by the Western Rose Co., San Fernando, Cal., and introduced by the Germain Seed & Plant Co., Los Angeles, Cal. Flower is described as globular, five inches in diameter, with thirty petals, being apricot-yellow in color and slightly fragrant. Flower is said to be similar to Duchess of Atholl, but is different in color, is larger and is a more abundant bloomer.

President Boone. Hybrid tea. Originated by Howard & Smith, Montebello, Cal., and introduced by them this year. Said to be the progeny of unnamed seedlings. Flowers are described as full and deep, between four and five inches in diameter and of a brilliant crimson that does not blue. Intensely fragrant. Plant is upright, with large, leathery foliage, is vigorous and hardy and is a continuous bloomer.

Topaz. Polyantha. Originated by Mathias Tantau, Uetersen, Germany, and introduced by the Conard-Pyle Co., West Grove, Pa., in 1935. Said to be a seedling of Johanna Tantau x (Prof. Gnau x Julien Potin). Flower is described as double with a high center, followed by a cactus curl to the petals. It is one and one-half inches in diameter, has forty to fifty petals and is lemon yellow and cream in color. Slightly fragrant. Flowers are borne in clusters of several together. Plant is described as low-growing and spreading in habit, resistant to disease and a continuous bloomer.

Tom Thumb. This is a change in name of the Lawrenciana rose formerly registered as Peon. It was originated by John de Vink, Holland, and is to be introduced by the Conard-Pyle Co., West Grove, Pa., in 1936. R. Marion Hatton.

NEW ROSE PATENTED.

A plant patent was granted October 29, report Rummler, Rummler & Woodworth, patent lawyers of Chicago, on a rose described as follows:

No. 144. Hybrid tea rose. Martin C. Amling, Pana, Ill., assignor to the Amling Rose Co., Pana, Ill. A variety of rose characterized particularly by having a color range from Tyrian rose and rose color to deep rose-pink and amaranth pink, a delicate and attractive fragrance of long duration, a bush unusually prolific of bloom and a bloom of large-size petals.

NEW AZALEAS PATENTED.

Rummler, Rummler & Woodworth, Chicago patent lawyers, have announced that the following plant patents on azaleas were issued November 5:

No. 145. Azalea. Lambertus Christian Bobbink, East Rutherford, N. J. A variety of evergreen azalea characterized particularly by the quick, graceful growth and early and profuse flowering of the plant in trusses and by the production of flowers of large size, of single, 5-petaled structure, with subvarieties blooming over an exceptionally wide range of time and in colors ranging from white to dark carmine.

No. 146. Azalea. Lambertus Christian Bobbink, East Rutherford, N. J. A variety of evergreen azalea characterized particularly by the quick, graceful growth and early and profuse flowering of the plant in trusses and by the production of flowers of large size, of semidouble, 10-petaled structure, with subvarieties blooming over an exceptionally wide range of time and in colors ranging from white to dark carmine.

No. 147. Azalea. Lambertus Christian Bobbink, East Rutherford, N. J. A variety of evergreen azalea characterized particularly by the quick, graceful growth and early and profuse flowering of the plant in trusses and by the production of flowers of large size, of double, many-petaled structure, with subvarieties blooming over an exceptionally wide range of time and in colors ranging from white to dark carmine.

OBITUARY.

Mrs. D. M. Mitchell.

Mrs. D. M. Mitchell, wife of D. M. Mitchell, of the Mitchell Nursery Co., Owatonna, Minn., and a former president of the Minnesota State Nurserymen's Association, died recently at the City hospital, Owatonna, after a short illness. Mrs. Mitchell was well liked not only in her home city but elsewhere.

The deceased belonged to many organizations and was an industrious member in all. She was a charter member of the D. A. R. and a past matron in the Eastern Star organization. She was also a lifelong member of and worker in the Universalist church of Owatonna. Surviving Mrs. Mitchell are her husband, D. M. Mitchell; a son, Leslie, who is well known among nurserymen; two grandchildren, and a brother. Funeral services, which were private, were held at the home of the family November 4, attended by friends and members of the Minnesota State Nurserymen's Association. L. S.

HARRY C. ENGLISH, of Springtime Gardens, Inc., Bound Brook, N. J., landscape gardener and nurseryman, died November 9 at Plainfield, N. J.

WOODROW SMACK was badly burned about the hands and arms October 29 in a fire which destroyed the tool house and electric power house of the Del-Mar-Va Nurseries, Selbyville, Del. In trying to start the electric system, Mr. Smack poured gasoline into the engine to prime it and the gasoline exploded. Elton Lynch is the proprietor of the nurseries.

THE Monrovia Nursery Co., Monrovia, Cal., celebrated its ninth anniversary with a sale starting October 4. The proprietor is H. E. Rosedale.

WITH 250 shares, no par, Richfield Nurseries, Inc., Columbus, O., has been incorporated by George M. Roudebush, I. J. Schryer and M. E. Fahey.

B. F. KINDIG is building up a nursery at Shipshewana, Ind. He was formerly a nurseryman at Middlebury, Ind., but was out of the business for several years.

A SHED at the nursery of the I. E. Ilgenfritz' Sons Co., Monroe, Mich., was destroyed by fire October 20, with a loss of $15,000, part of which was covered by insurance.

D. B. MILLIKEN, of the Claremont Nursery, Claremont, Cal., has announced that J. H. Milliken, formerly head salesman for the old Floral Home Nursery, Pomona, Cal., has joined the Claremont firm.

AT PUBLIC auction, in a foreclosure sale, the Ira Williams nursery farm, Jamestown, N. Y., consisting of about six acres of land, nursery buildings, a garage and a 6-room residence, was bought October 23 by Albert Nelson, Jamestown. Mr. Williams died a year ago.

INCLUDED in the display of Outpost Nurseries, Inc., Ridgefield, Conn., at the recent fair at Danbury, Conn., was a 50-foot European beech tree, with a 30-foot spread. The tree is estimated to be 40 years old and, with its entire root system, weighed twelve tons when it was moved to the fair for planting near the former automobile building.

WILLIAM E. DICK, landscape architect, has become associated with Waynesboro Nurseries, Inc., Waynesboro, Va., opening an office in the Citizens-Waynesboro Bank building. Mr. Dick is a graduate of the landscape and engineering department of the North Carolina State College of Agriculture and Engineering and has had considerable experience designing and restoring gardens in the south.

THE Hazen Home Nursery, west of Hatfield, Ind., is operated by Mr. and Mrs. Smith Hazen, who celebrated their fiftieth wedding anniversary October 8. Mr. Smith is 76 years old and Mrs. Smith 68, and they started their business forty years ago at Boonville, Ind., moving to a farm northwest of Hatfield in 1900 and seven years later moving to the present location. Mr. Smith is the grower and Mrs. Smith sells the stock and does the landscaping.

DR. AUGUST E. MILLER, florist of Zanesville, O., has been named regional nursery director of six states, which are Ohio, Indiana, Michigan, West Virginia, Kentucky and Tennessee. This is the first of a number of such regions to be established by the federal government. The first nursery will be started soon on a 200-acre tract near Zanesville, Dr. Miller planning to plant 40,000,000 seeds of deciduous and evergreen stock, the seedlings to be supplied to soil-erosion control projects and C. C. C. camps.

MINNESOTA SOIL STUDIES.

A study of soils as a guide to forest management, which should prove, at least in some parts, of interest to nurserymen, has been concluded by the staff of the lake states forest experiment station in Minnesota.

As a basis for selecting planting sites or determining species to use in the conversion of aspen areas, the station has correlated some of the 400 different soil types in the forested part of the lake states with cover types. It was found that differences between many of the soil types are not reflected in differences of forest cover. The factor that controls the occurrence of permanent forest cover is the water régime, or moisture relationships, of the soil. Although soils may belong to several soil types, if they have a similar water régime, they will usually have the same forest cover. The soil types were, therefore, classified on the basis of their moisture relationships into six major groups.

These six soil groups correspond to certain broad forest types as follows:

Soil Group	Forest Cover	Characteristic Species
Dry	Pine	Jack pine and Norway pine
Fresh	Oak	White, black and red oaks
Moist	Northern hardwoods of good quality	Sugar maple, beech, yellow birch, basswood
Intermittently wet	Northern hardwoods of poor quality	Same species, with yellow birch more important
Wet	Lowland hardwoods	Elm, ash, soft maples
Saturated	Coniferous swamp	Black spruce, cedar, tamarack

The water régime of the soil is, of course, the resultant of many factors, such as texture, depth of water table, character of the subsoil and topography. These conditions can be easily recognized in the field, and the suitability of a given soil for forest purposes can, therefore, be readily determined. For instance, a sand with a subsoil of sand or rock has a deep water table or none at all and is a dry soil. A sandy loam over a subsoil of clay, even with a fairly low water table, is likely to be a fresh soil. A moist soil is the result of a combination of loam over sand or especially clay, with a water table at not great depth from the surface. The remaining groups—intermittently wet, wet and saturated soils—can be determined by their topography.

With these simple indications, there should be no difficulty in determining the moisture conditions of soils and their potential forest cover.

CLASSIFIED ADVERTISING

Roses, field-grown, 2-year, No. 1; Peaches, 1-year; Cherries, 2-year; Pears, 2-year. Extra nice, first-class stock; send for list.
J. Geraghty & Son, Geneva, N. Y.

Peach Seed, Tennessee Naturals, about 6,000 seed to bu., 1 to 10 bus., $2.25; 10 to 50 bus., $2.12½; 50 bus. and up, $2.00.
Surplus November 5, 200 bu.
Tennessee Nursery Co., Cleveland, Tenn.

Nursery Tools, Leonard Full-strapped Spades, Kunde Knives and Shears, Budding and Grafting Supplies. Free 80-page wholesale catalogue illustrates 600 tools.
A. M. Leonard & Son, Piqua, Ohio.

OKLAHOMA INSPECTION RULES.

R. E. Montgomery, state nursery inspector for Oklahoma, has released the following regulations:

"According to a recent act of the Oklahoma legislature, all persons, firms or corporations growing nursery stock in the state of Oklahoma for the purpose of resale must apply to the state nursery inspector at Oklahoma City for inspection of their stock before said stock can be legally disposed of. The same applies to all florists handling cut flowers, pot plants, bedding plants, roots, corms, rhizomes, etc. The act provides for a $5 (per day or fraction thereof) inspection fee and expenses. Any person disposing of nursery or floral stock not grown by himself is compelled according to a ruling of the attorney-general's office to acquire a dealer's certificate. Said certificate can be obtained from the state board of agriculture by executing a bond in the sum of $2,000, furnishing said department with an affidavit to the effect that they have and will comply with all rules and regulations adopted by the department, and payment of a state fee of $20.

"All persons wishing to act as agents must secure an agent's certificate from this department, and said agent's certificate will be issued upon request of the principal and a payment of a state fee of $1. All out-of-state nurserymen, florists or greenhouse men can obtain permission to ship their products into Oklahoma by filing with the orchard and nursery department of the board of agriculture a copy of their inspection certificate issued by the state inspector of the state where said stock was grown and remitting a state fee of $5.

"The requirements mentioned for a dealer's certificate apply to any firm, corporation or individual who is a resident of the state of Oklahoma or to a nonresident.

"Any further information can be obtained from the orchard and nursery department, State Capitol building, Oklahoma City."

HELP WANTED

Nurseryman, young man to develop small nursery on percentage. One capable of doing landscaping and not afraid of work. Good opportunity for hustler.
Hal Kohn, Newberry, S. C.

HELP WANTED

Experienced nursery salesman to call on tobacco farmers and city trade in Virginia and North Carolina. Special offer with weekly advances to cracker-jack salesman. A splendid territory. We have a good line of fruit and ornamentals. Write quick.
Jones Nursery, Woodlawn, Va.

TO EXCHANGE

Seed and seedlings of perennials and rock garden plants. Want hardy Phloxes, Chrysanthemums, Azaleas, Bulbs, small Evergreens, or anything we can use.
Arthur Lee **Bridgeport, Pa.**

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